

Name: Mitrovich - Key TP: _____

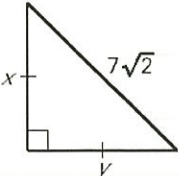
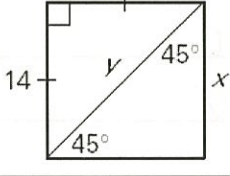
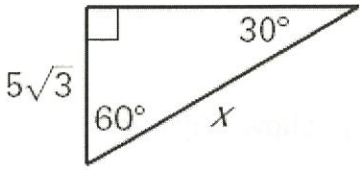
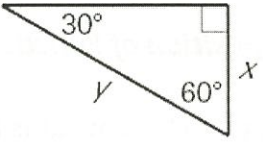
Here are the units we have studied 2nd semester. The review packet will follow in this order, as well as the final.

- 1) Special Right Triangles
- 2) Composition of Functions
- 3) Trigonometry
- 4) Unit Circle
- 5) Complex Perimeter and Area
- 6) Properties of Quadrilaterals
- 7) Properties of Circles
- 8) Quadratics
- 9) Surface Area and Volume

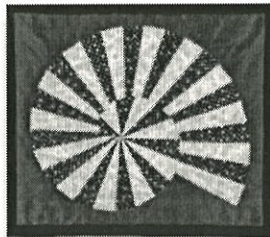
* This packet will be collected at the time of your final and will be scored out of 20 points.

Good Luck!

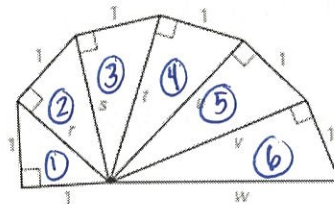
Special Right Triangles

<p>1) Find the value of each variable. Write answers in the simplest radical form.</p>  <p>$x = y = 7$</p>	<p>2) Find the value of each variable. Write answers in the simplest radical form.</p>  <p>$x = 14$ $y = 14\sqrt{2}$</p>
<p>3)</p>  <p>$y = (5\sqrt{3})\sqrt{3}$ $y = 15$ $x = 2(5\sqrt{3})$ $x = 10\sqrt{3}$</p>	<p>4)</p>  <p>$18 = a\sqrt{3}$ $\frac{18}{\sqrt{3}} = \frac{a\sqrt{3}}{\sqrt{3}}$ $\frac{18}{\sqrt{3}} = a$ $x = a = 6\sqrt{3}$ $y = 12\sqrt{3}$</p>

The quilt design in the photo is based on the pattern in the diagram to the right. Use the diagram to answer the following questions.



Wheel of Theodorus



1. Find the values of r , s , t , u , v and w . Explain the procedure you used to find the values.

$$a^2 + b^2 = c^2$$

$$\textcircled{1} \quad 1^2 + 1^2 = c^2$$

$$c = \sqrt{2}$$

$$\textcircled{2} \quad (\sqrt{2})^2 + 1^2 = c^2$$

$$c = \sqrt{3}$$

$$\textcircled{3} \quad (\sqrt{3})^2 + 1^2 = c^2$$

$$c = \sqrt{4} = 2$$

$$r = \sqrt{2}$$

$$s = \sqrt{3}$$

$$t = \sqrt{4} = 2$$

$$u = \sqrt{5}$$

$$v = \sqrt{6}$$

$$w = \sqrt{7}$$

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2. Which of the triangles, if any, is a $45^\circ - 45^\circ - 90^\circ$ triangle? Which of the triangles, if any, is a $30^\circ - 60^\circ - 90^\circ$ triangle? Explain how you know for each type of triangle. (Note: "r" can be used to reference the first triangle, "s" can be used to reference the second triangle, and so on.)

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$\textcircled{1}$ is a $45 - 45 - 90$

$\textcircled{3}$ is a $30 - 60 - 90$

Composition of Functions & Undefined Functions

1) If $(f \circ g)(x) = \sqrt{x^2 + 10}$, and $g(x) = x^2 + 7$ what is a possible expression for $f(x)$? Show why this works.

$$f(x) = \sqrt{x + 3}$$

$$f(g(x)) = \sqrt{(x^2 + 7) + 3} = \sqrt{x^2 + 10}$$

2) If $f(x) = \sqrt{4x}$ and $g(x) = 7 - x$, what is $g(f(g(-9)))$?

$$g(-9) = 7 - (-9) = 16$$

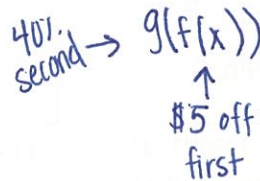
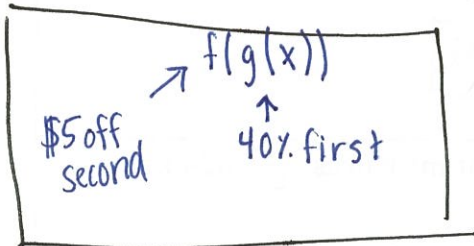
$$f(16) = \sqrt{4(16)} = 2 \cdot 4 = 8$$

$$g(8) = 7 - 8 = -1$$

$$g(f(g(-9))) = -1$$

3) The regular price of a microwave is x dollars. Using a \$5 off coupon makes the price $f(x) = x - 5$. A 40% off sale makes the price $g(x) = 0.6 \cdot x$. Which composite function represents the better deal? Why?

- A. $(f \circ g)(x)$ - First take off \$5, then take off 40%
- B. $(g \circ f)(x)$ - First take off \$5, then take off 40%
- C. $(f \circ g)(x)$ - First take off 40%, then take off \$5**
- D. $(g \circ f)(x)$ - First take off 40%, then take off \$5



Better deal!!

4) If $g(x) = 3x - 1$ and $f(x) = x^2 + 1$, compute $f \circ g(x)$.

$$f(g(x)) = (3x - 1)^2 + 1$$

$$= 9x^2 - 6x + 1 + 1$$

$$\boxed{f(g(x)) = 9x^2 - 6x + 2}$$

5) Compute $(g \circ f)(x)$ using the functions

$$f(x) = x^2 + 1 \text{ and } g(x) = 2x - 5$$

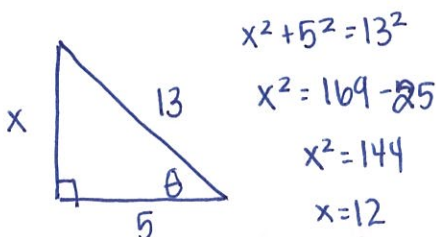
$$g(f(x)) = 2(x^2 + 1) - 5$$

$$= 2x^2 + 2 - 5$$

$$\boxed{g(f(x)) = 2x^2 - 3}$$

1) If in a right triangle $\tan \theta = \frac{x}{5}$ and $\sin \theta = \frac{x}{13}$, then $x = ?$

- A. 1
B. 7
C. 12
D. 144
E. Cannot be determined from given information



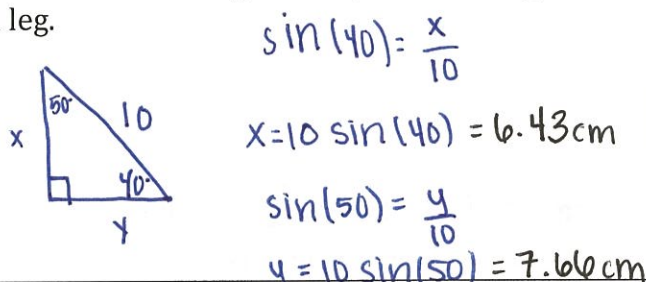
2) Find the **exact** value of $\tan \frac{\pi}{4} + \sin 30^\circ$. **Prove** your answer using special right triangles.

$$\tan\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}/2}{\sqrt{2}/2} = 1$$

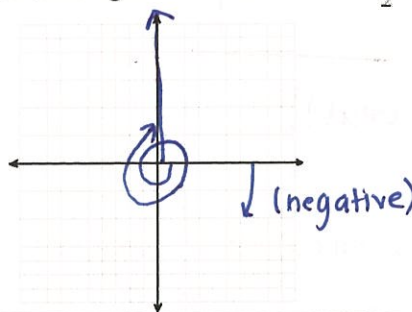
$$\sin(30^\circ) = \frac{1}{2}$$

$$1 + \frac{1}{2} = \boxed{1.5}$$

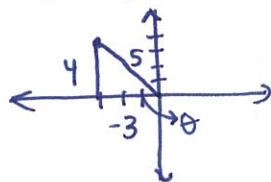
3) A right triangle has a hypotenuse of length 10 centimeters. If one angle is 40° , find the length of each leg.



4) Draw an angle that measures $-\frac{7\pi}{2}$ radians.



5) Find the exact value of each of the three remaining trigonometric functions of an angle θ if $(-3, 4)$, is a point on the terminal side of θ .

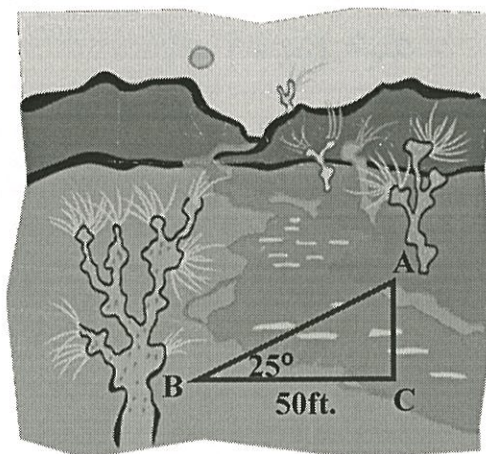


$$\sin \theta = \frac{4}{5}$$

$$\cos \theta = -\frac{3}{5}$$

$$\tan \theta = \frac{4}{-3}$$

6) **Finding the Width of a River** Find the distance from A to C across the river illustrated in the figure.

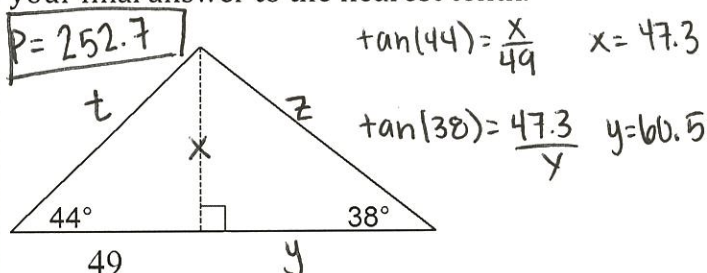


$$\tan(25^\circ) = \frac{AC}{50}$$

$$AC = 50 \tan(25^\circ)$$

$$AC = 23.3 \text{ ft}$$

7) Find the perimeter of the larger triangle. Round intermediate values to the nearest tenth. Use the rounded values to calculate the next value. Round your final answer to the nearest tenth.



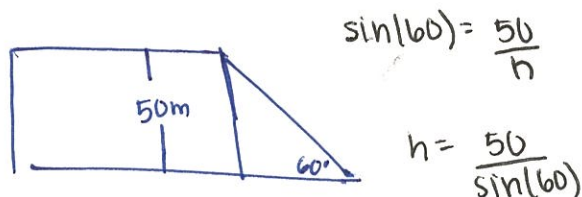
$$\cos(44^\circ) = \frac{49}{t}$$

$$t = 121$$

$$\cos(38^\circ) = \frac{y}{z} = \frac{60.5}{z}$$

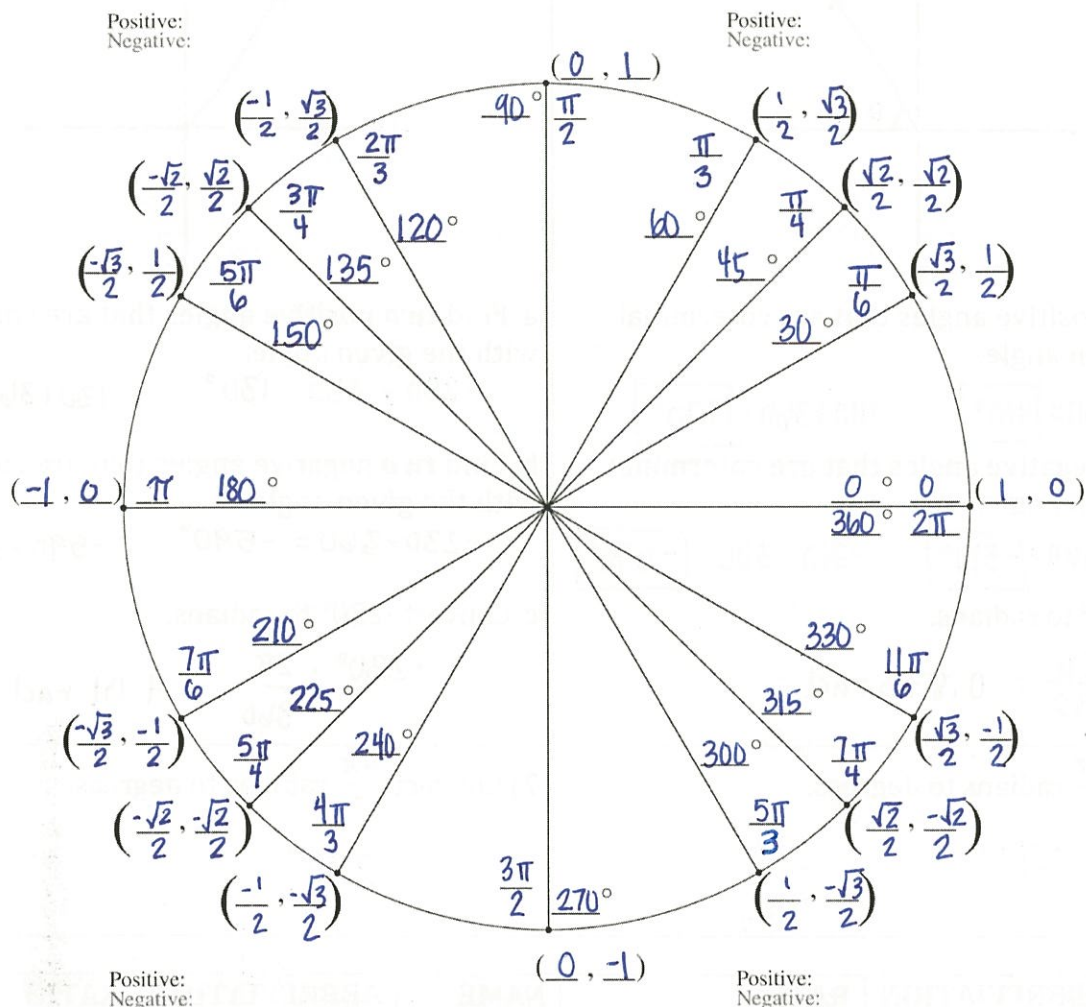
$$z = 76.8$$

8) Suppose that you are headed toward a plateau 50 meters high. If the angle of elevation to the top of the plateau is 60° , how far are you from the base of the plateau? Draw a picture and round your answer to the nearest tenth.



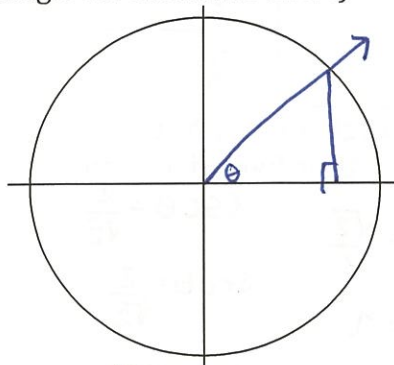
$$h = 57.7 \text{ m}$$

Unit Circle



Use right triangles to derive the coordinate points in the first quadrant of the unit circle.

1) $\theta = 45^\circ$ (draw a special right triangle for each unit circle)

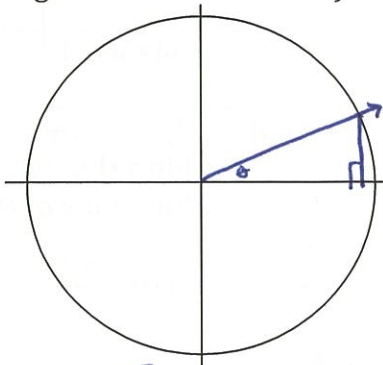


$$\cos 45^\circ = \frac{\sqrt{2}}{2}$$

$$\sin 45^\circ = \frac{\sqrt{2}}{2}$$

$$\text{Coordinate} = \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2} \right)$$

2) $\theta = 30^\circ$ (draw a special right triangle for each unit circle)

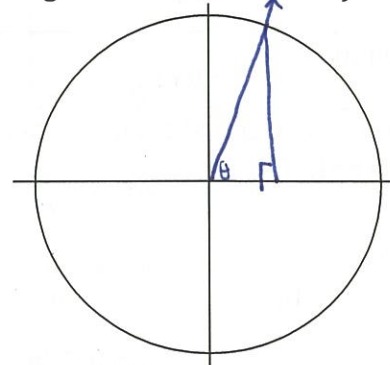


$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\sin 30^\circ = \frac{1}{2}$$

$$\text{Coordinate} = \left(\frac{\sqrt{3}}{2}, \frac{1}{2} \right)$$

3) $\theta = 60^\circ$ (draw a special right triangle for each unit circle)

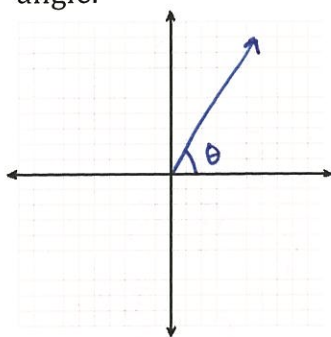


$$\cos 60^\circ = \frac{1}{2}$$

$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\text{Coordinate} = \left(\frac{1}{2}, \frac{\sqrt{3}}{2} \right)$$

4) Draw a 50° angle.



a. Find **two** positive angles that are coterminal with the given angle.

$$50 + 360 = \boxed{410^\circ} \quad 410 + 360 = \boxed{770^\circ}$$

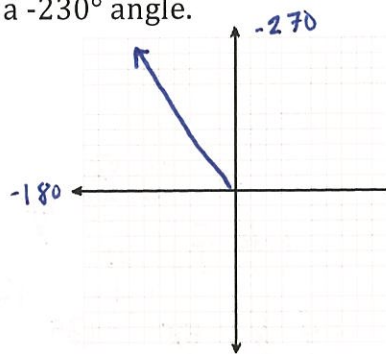
b. Find **two** negative angles that are coterminal with the given angle.

$$50 - 360 = \boxed{-310^\circ} \quad -310 - 360 = \boxed{-670^\circ}$$

c. Convert 50° to radians.

$$50^\circ \cdot \frac{2\pi}{360} = 0.873 \text{ rad}$$

5) Draw a -230° angle.



a. Find **two** positive angles that are coterminal with the given angle.

$$-230 + 360 = 130^\circ \quad 130 + 360 = 490^\circ$$

b. Find **two** negative angles that are coterminal with the given angle.

$$-230 - 360 = -590^\circ \quad -590 - 360 = -950^\circ$$

c. Convert -230° to radians.

$$-230^\circ \cdot \frac{2\pi}{360} = 4.01 \text{ rad.}$$

6) Convert $\frac{3\pi}{2}$ radians to degrees.

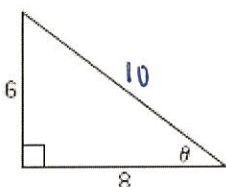
$$270^\circ$$

7) Convert $\frac{4\pi}{3}$ radians to degrees.

$$240^\circ$$

NAME	ABBREVIATION	RATIO	NAME	ABBREVIATION	RATIO
sine	\sin	$\frac{O}{H}$	cosecant	\csc	$\frac{H}{O}$
cosine	\cos	$\frac{A}{H}$	secant	\sec	$\frac{H}{A}$
tangent	\tan	$\frac{O}{A}$	cotangent	\cot	$\frac{A}{O}$

8) Evaluate the six trigonometric functions of the angle θ .



$$\begin{aligned} \sin \theta &= \frac{6}{10} & \csc \theta &= \frac{10}{6} \\ \cos \theta &= \frac{8}{10} & \sec \theta &= \frac{10}{8} \\ \tan \theta &= \frac{6}{8} & \cot \theta &= \frac{8}{6} \end{aligned}$$

9) Let θ be an acute angle of a right triangle. Find the value of the other five trigonometric functions of θ .

$$\begin{aligned} \sin \theta &= \frac{\sqrt{2}}{2} & \cos \theta &= \frac{\sqrt{2}}{2} & \csc \theta &= \frac{2}{\sqrt{2}} \\ \tan \theta &= 1 & \sec \theta &= \frac{2}{\sqrt{2}} & \cot \theta &= 1 \end{aligned}$$

10) Evaluate the 6 trig functions of 45°

$$\begin{aligned} \sin \theta &= \frac{\sqrt{2}}{2} & \csc \theta &= \frac{2}{\sqrt{2}} \\ \cos \theta &= \frac{\sqrt{2}}{2} & \sec \theta &= \frac{2}{\sqrt{2}} \\ \tan \theta &= 1 & \cot \theta &= 1 \end{aligned}$$

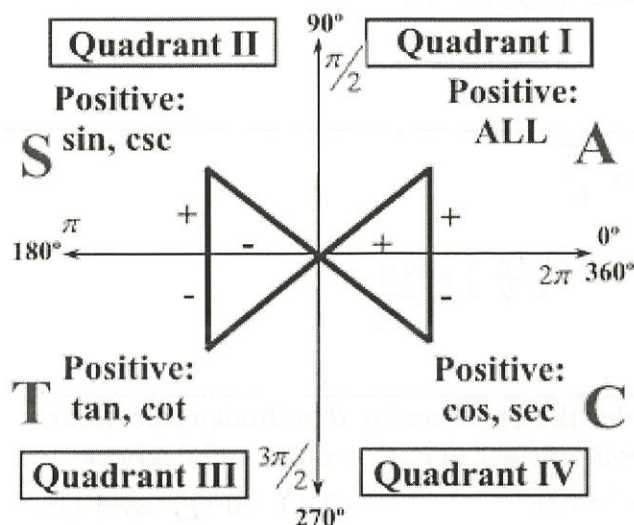
11) Evaluate the 6 trig functions of 30° .

$$\begin{aligned} \sin(60) &= \frac{\sqrt{3}}{2} & \csc(60) &= \frac{2}{\sqrt{3}} \\ \cos(60) &= \frac{1}{2} & \sec(60) &= 2 \\ \tan(60) &= \frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \sqrt{3} & \cot(60) &= \frac{1}{\sqrt{3}} \end{aligned}$$

$$\tan \theta = 1$$

If θ is not a quadrantal angle, the sign of a trig function depends on the quadrant in which θ lies:

Draw Picture:



“A Smart Trig Class” or “All Students Take Calculus”

A S T C

*All positive in Q1

*Sine (and reciprocal function cosecant) positive in Q2

*Tangent (and reciprocal cotangent) positive in Q3

*Cosine (and reciprocal secant) positive in Q4

12) Evaluate, if possible, the sine function and tangent function of the 4 quadrantal angles:

a. $\theta = 0^\circ = 0$

$$\sin(0) = 0$$

$$\tan(0) = \frac{0}{1} = 0$$

b. $\theta = 90^\circ = \frac{\pi}{2}$

$$\sin(90) = 1$$

$$\tan(90) = \frac{1}{0} = \text{undefined}$$

c. $\theta = 180^\circ = \pi$

$$\sin(180) = 0$$

$$\tan(180) = 0$$

d. $\theta = 270^\circ = \frac{3\pi}{2}$

$$\sin(270) = -1$$

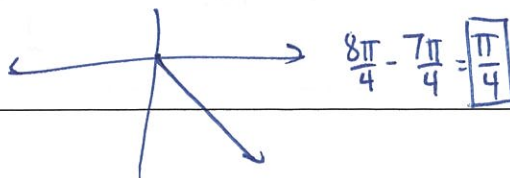
$$\tan(270) = \text{undefined}$$

14) Find the reference angle θ' , for each of the following angles:

a. $\theta = 210^\circ$

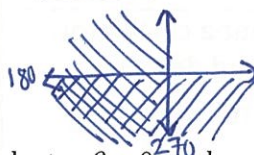


b. $\theta = \frac{7\pi}{4}$



13) Name the quadrant in which angle θ lies.

a. $\sin \theta < 0$ and $\cos \theta < 0$



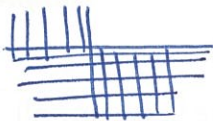
$$180 \leq \theta \leq 270$$

b. $\tan \theta < 0$ and $\cos \theta < 0$



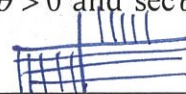
$$90 \leq \theta \leq 180$$

c. $\tan \theta < 0$ and $\sin \theta < 0$



$$270 \leq \theta \leq 360$$

d. $\cot \theta > 0$ and $\sec \theta < 0$



$$180 \leq \theta \leq 270$$

15) Use reference angles to find the exact value of the following trig functions:

a. $\sin \theta = 300^\circ$

$$\sin(60) = \sqrt{3}/2$$

$$\sin(300) = -\frac{\sqrt{3}}{2}$$

b. $\tan \theta = \frac{5\pi}{4}$

$$\tan\left(\frac{5\pi}{4}\right) = 1$$

Evaluate the function without using a calculator.

<p>16) $\sin 240^\circ$</p> $\sin(240) = -\frac{\sqrt{3}}{2}$	<p>17) $\cos 330^\circ$</p> $\cos(330) = \frac{\sqrt{3}}{2}$
<p>18) $\sin \frac{4\pi}{3}$</p> <p>same angle!</p> $\sin\left(\frac{4\pi}{3}\right) = -\frac{\sqrt{3}}{2}$	<p>19) $\cos \frac{7\pi}{6}$</p> $\cos\left(\frac{7\pi}{6}\right) = -\frac{\sqrt{3}}{2}$
<p>20) Solve the equation for θ without a calculator. Give your answer in both radians and degrees.</p> <p>$\sin \theta = \left(-\frac{\sqrt{3}}{2}\right)$ (restrict to QI & Q4)</p> $\theta = 300^\circ = \frac{5\pi}{3}$	<p>21) Solve the equation for θ without a calculator. Give your answer in both radians and degrees.</p> <p>$\tan \theta = (-\sqrt{3})$ (restrict to QI and Q4)</p> $\theta = 300^\circ \text{ or } \frac{5\pi}{3}$
<p>22) Solve the equation for θ without a calculator. Give your answer in both radians and degrees.</p> <p>$\cos \theta = \left(-\frac{1}{2}\right)$ restrict to QI / QII</p> $\theta = 120^\circ = \frac{2\pi}{3}$	<p>23) Solve the equation for θ without a calculator. Give your answer in both radians and degrees.</p> <p>$\sin \theta = 0$</p> $0^\circ \text{ or } 360^\circ \quad / \quad 0 \text{ rad } 2\pi \text{ rad}$

Complex Perimeter & Area

<p>1) What is the area of the entire hexagon? All measurements are in feet.</p> <p> $A = \frac{1}{2}(3)(4) = 6$ $6 + 6 + 14 = 26$ </p>	<p>2) What is the area of the shaded region? Leave your answer in terms of pi.</p> <p> $A = 6(7) + \frac{1}{2}(4)(7) = 42 + 14 = 56$ $A_0 = \frac{1}{4}\pi(3)^2 = 9\pi$ $56 - 9\pi$ </p>
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3) A square and a semicircular region have the same perimeter. If the length of the radius of the semicircular region is 8, what is the length of one side of the square?

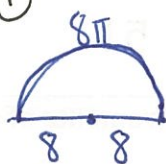
②



$$P = \frac{16 + 8\pi}{4}$$

$$s = 4 + 2\pi$$

①

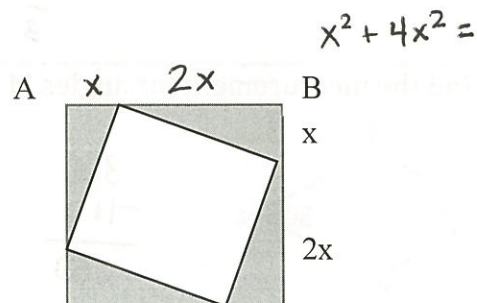


$$C = 2\pi(8) = 16\pi$$

$$\frac{16\pi}{2} = 8\pi$$

$$P = 16 + 8\pi$$

4) In the figure below, ABCD is a square. Points on each pair of adjacent sides of ABCD are connected to form 4 congruent right triangles with one leg two times as long as the other, as shown below. What fraction of the area of square ABCD is shaded?



Properties of Quadrilaterals

1) Which of the following statements is **NOT** true about parallelograms?

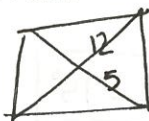
- a. consecutive angles are congruent
- b. opposite sides are congruent ✓
- c. opposite angles are congruent ✓
- d. the diagonals bisect each other ✓

2) Which of the following quadrilateral is not a parallelogram?

- I. Trapezoid
- II. Kite
- III. Square ✓
- IV. Rectangle ✓

- A. I
- B. II and III
- C. I and II
- D. I, II, and III
- E. All of above

3) If one diagonal of a rhombus is 10 cm and the other is 24 cm.



a. How long is each side of the rhombus?

$$12^2 + 5^2 = 13^2 \quad s = 13 \text{ cm}$$

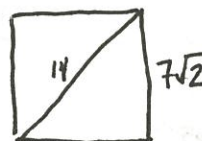
b. Find the perimeter.

$$P = 4(13) = 52 \text{ cm}$$

c. Find the area.

$$A = \frac{1}{2}(24)(10) = 120 \text{ cm}^2$$

4) The diagonal of a square is 14 inches.



a. How long is each side of the square?

$$7\sqrt{2}$$

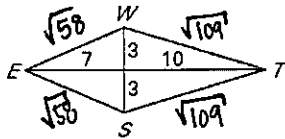
b. Find the perimeter.

$$P = 28\sqrt{2} \text{ in.}$$

c. Find the area.

$$(7\sqrt{2})(7\sqrt{2}) = 49(2) = 98 \text{ in}^2$$

5) Use the figure below to:



$$17\frac{1}{3}$$

a. Find the length of each side.

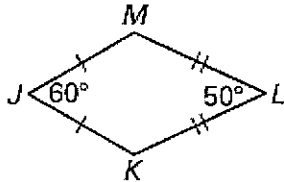
b. Find the perimeter.

$$P = 2\sqrt{58} + 2\sqrt{109}$$

c. Find the area.

$$A = \frac{1}{2}(6)(17) = 51$$

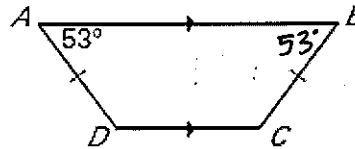
6) Find the measurement for angles M and K.



$$\begin{array}{r} 360 \\ -110 \\ \hline 250 \end{array} \quad \frac{250}{2} =$$

$$\boxed{125^\circ}$$

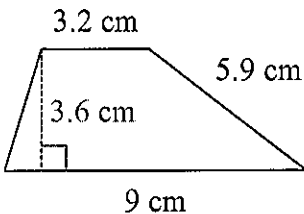
7) Find the measurements of angle B, C, and D.



$$\begin{array}{r} 360 \\ -106 \\ \hline 254 \\ \hline 2 = 127 \end{array}$$

$$\boxed{127^\circ}$$

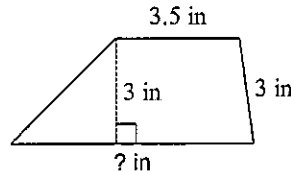
8) Find the area:



$$A = \frac{1}{2}(3.2+9)(3.6)$$

$$\boxed{A = 21.96 \text{ cm}^2}$$

9) Find the base:

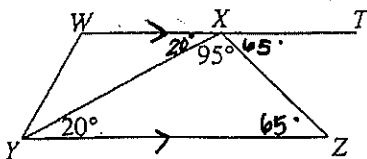


$$A = \frac{1}{2}(3.5 + ?)(3) = 15.6$$

$$\text{Area} = 15.6 \text{ in}^2$$

10)

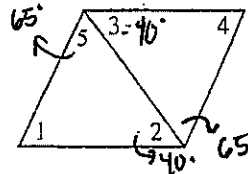
In the figure below, WXZY is a trapezoid, point X lies on WT, and the angles are as marked. What is the measure of $\angle ZXT$?



$$\begin{array}{r} 180 \\ -115 \\ \hline 65 \end{array}$$

$$\boxed{m\angle ZXT = 65^\circ}$$

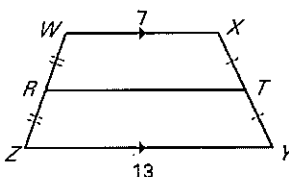
11) In the parallelogram below, a diagonal is shown and $\angle 3$ measures 40° and $\angle 5$ measures 65° . What is the $m\angle 1$?



$$\begin{array}{r} 180 \\ -105 \\ \hline 75 \end{array}$$

$$\boxed{m\angle 1 = 75^\circ}$$

12) Find the length of the midsegment RT.



$$\frac{7+13}{2} = \frac{20}{2}$$

$$\boxed{RT = 10}$$

Properties of Circles (and review your proofs!)

1) The points K and M are points of tangency. Find the value(s) of x .

$$2x^2 + 3x - 2 = 3$$

$$2x^2 + 3x - 5 = 0$$

$$(x+5)(x-2) = 0$$

$$x = \left\{ -\frac{5}{2}, 2 \right\}$$

2) Find the radius, r .

$$4^2 + r^2 = (2+r)^2$$

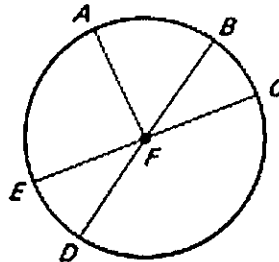
$$r^2 + 16 = r^2 + 4r + 4$$

$$12 = 4r$$

$$r = 3$$

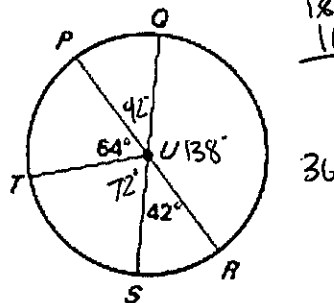
In $\odot F$, determine whether the given arc is a *minor arc*, *major arc*, or *semicircle*.

1. \widehat{AB} minor
2. \widehat{AE} minor
3. \widehat{EAC} semicircle
4. \widehat{ACD} major
5. \widehat{CAD} major
6. \widehat{DEB} semicircle
7. \widehat{BAE} minor
8. \widehat{DEC} major



In the figure, \overline{PR} and \overline{QS} are diameters of $\odot U$. Find the measure of the indicated arc.

9. $m\widehat{PQ}$ 42°
10. $m\widehat{ST}$ 72°
11. $m\widehat{TPS}$ $360 - 72 = 288^\circ$
12. $m\widehat{RT}$ 114°
13. $m\widehat{RQS}$ $360 - 42 = 318^\circ$
14. $m\widehat{QR}$ 138°
15. $m\widehat{PQS}$ $84 + 138 = 222^\circ$
16. $m\widehat{TQR}$ 244°
17. $m\widehat{PS}$ 136°
18. $m\widehat{PTR}$ 180°

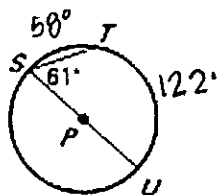


$$\begin{array}{r} 180 \\ - 108 \\ \hline 72 \end{array}$$

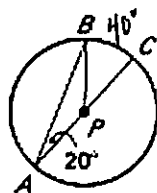
$$\begin{array}{r} 180 \\ - 42 \\ \hline 138 \end{array}$$

Find the measure of the indicated angle or arc in $\odot P$.

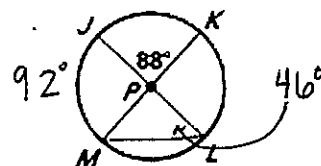
2. $m\widehat{ST}$



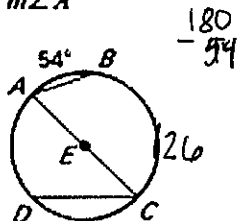
3. $m\widehat{AB} = 140^\circ$



4. $m\angle JLM$

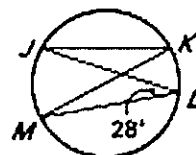


5. $m\angle A$



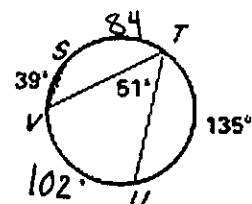
$$m\angle A = 63^\circ$$

6. $m\angle K$



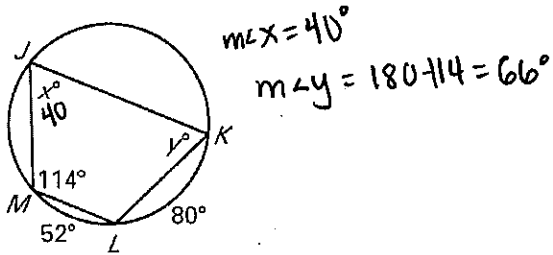
$$m\angle K = 28^\circ$$

7. $m\widehat{VST}$

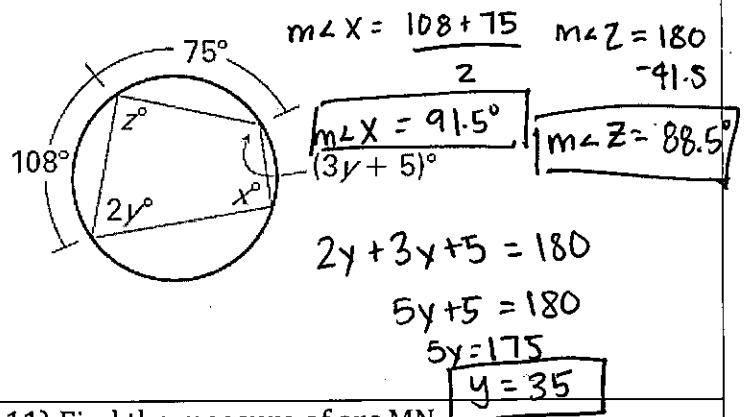


$$m\widehat{VST} = 123^\circ$$

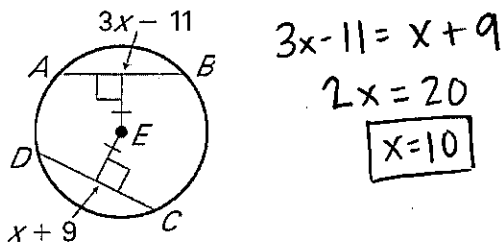
8) Find the values of the variables.



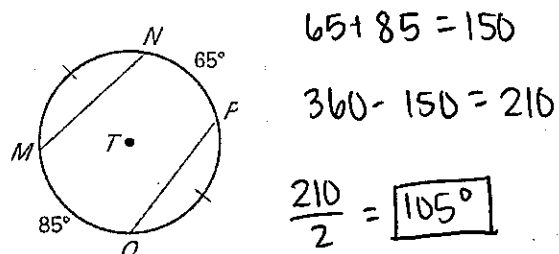
9) Find the values of the variables.



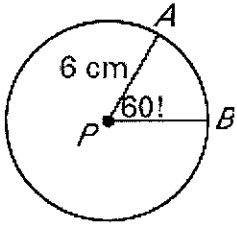
10) Find the value of x in the figure below.



11) Find the measure of arc MN.



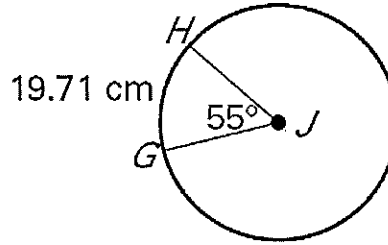
12) Find the length of arc AB.



$$\frac{60}{360} = \frac{x}{12\pi}$$

$$\boxed{x = 2\pi}$$

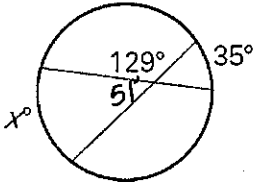
13) Find the circumference of circle J.



$$\frac{55}{360} = \frac{19.71}{x}$$

$$\boxed{x = 129.01}$$

14) Find the value of x. $180 - 129 = 51^\circ$



$$\frac{35+x}{2} = \frac{51}{2}$$

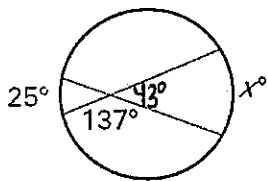
$$35+x = 51$$

$$35+x = 102$$

$$\boxed{x = 67}$$

$$\boxed{x = 283}$$

16) Find the value of x.

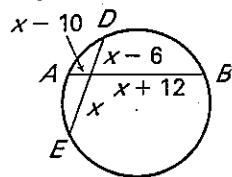


$$\frac{25+x}{2} = 43$$

$$25+x = 86$$

$$\boxed{x = 61}$$

18) Find x:



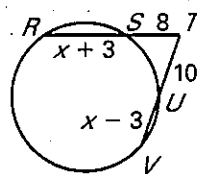
$$(x+12)(x-10) = x(x-6)$$

$$x^2 + 2x - 120 = x^2 - 6x$$

$$-120 = -8x$$

$$\boxed{x = 15}$$

19) Find x:



$$8(x+3+8) = 10(x-3+10)$$

$$8(x+11) = 10(x+7)$$

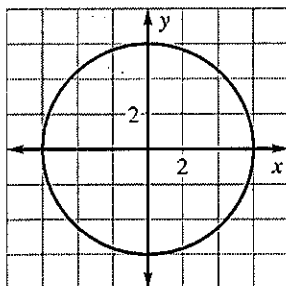
$$8x + 88 = 10x + 70$$

$$2x = 18$$

$$\boxed{x = 9}$$

Write the standard equation of the circle.

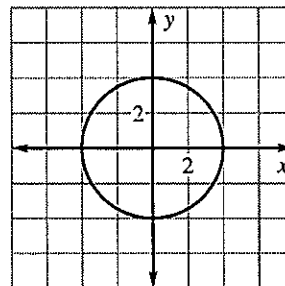
1.



$$x^2 + y^2 = 6^2$$

$$x^2 + y^2 = 36$$

2.



$$x^2 + y^2 = 4^2$$

$$x^2 + y^2 = 16$$

Write the standard equation of the circle with the given center and radius.

5. Center (0, 0), radius 9

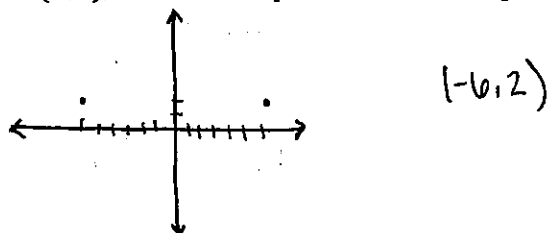
$$x^2 + y^2 = 81$$

6. Center (1, 3), radius 4

$$(x-1)^2 + (y-3)^2 = 16$$

Quadratics

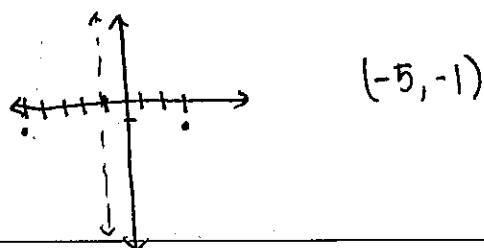
1. Consider the parabola whose Axis Of Symmetry (A.O.S) is $x=0$, graph the line. If there is one point at $(6,2)$, what other point lies on the parabola?



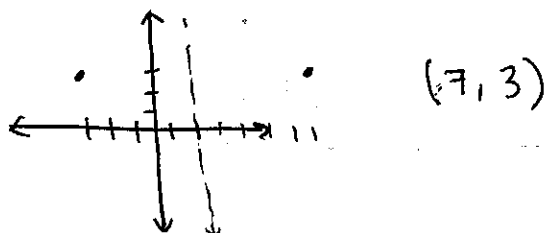
2. Can you determine the vertex of the parabola in problem 7? Why or why not?

No!

3. Consider the parabola whose Axis Of Symmetry (A.O.S) is $x=-1$, graph the line. If there is one point at $(3,-1)$, what other point lies on the parabola?



4. Consider the parabola whose Axis Of Symmetry (A.O.S) is $x=2$, graph the line. If there is one point at $(-3,3)$, what other point lies on the parabola?



Identify the vertex, x-intercept(s), y-intercept, and the axis of symmetry.

5.

x	-6	-5	-4	-3	-2
y	-4	-3	-4	-7	-12

vertex: $(-5, -3)$
 No x-intercepts (does not cross)
 y-intercept: not on table
 A.O.S: $x=-5$

6.

x	-1	0	1	2	2
y	21	11	5	3	5

vertex: $(2, 3)$
 AOS: $x=2$
 y-int: $(0, 11)$
 x-int: None

7.

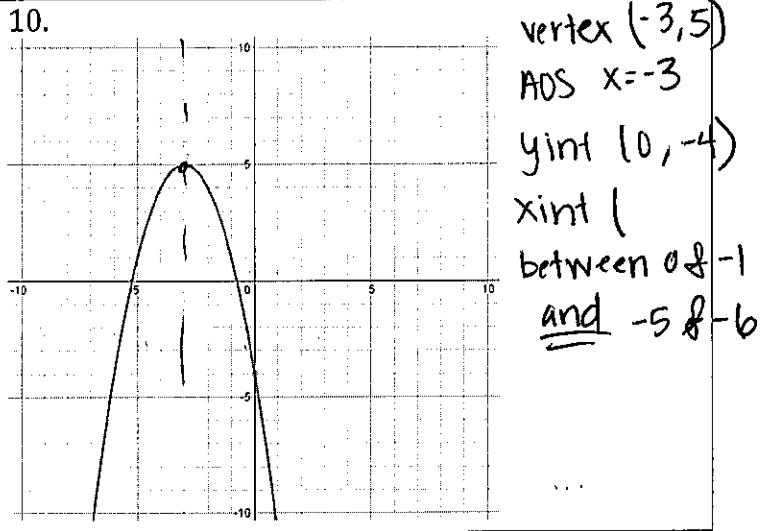
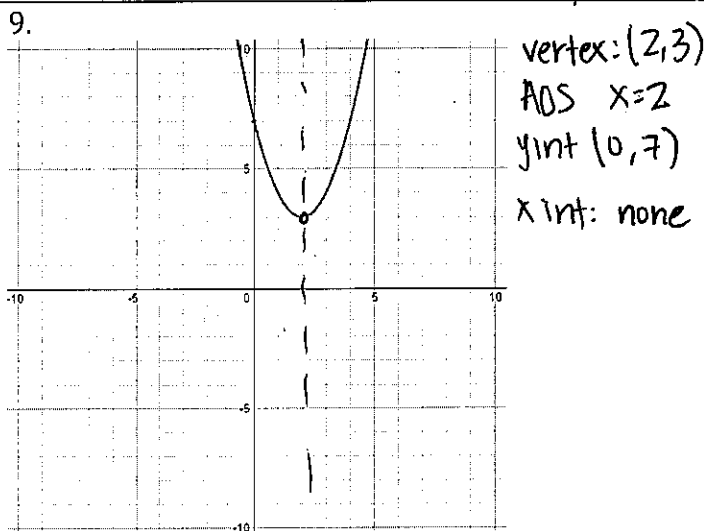
x	1	2	3	4	5
y	-7.5	-5	-3.5	-3	-3.5

vertex: $(4, -3)$
 AOS: $x=4$
 y-int: not on table
 x-int: None!

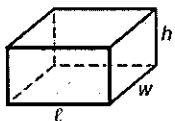
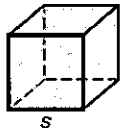
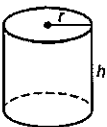
8.

x	-2	-1	0	1	2
y	141	97	61	33	13

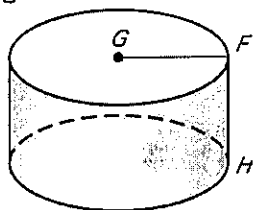
Not a parabola!



Review Surface Area and Volume

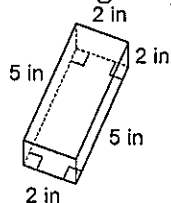
Solid	Formula: SURFACE AREA	Formula: VOLUME	Picture
RECTANGULAR PRISM	$2lw + 2lw + 2hl$	$l \cdot w \cdot h$	
CUBE	$6s^2$	s^3	
CYLINDER	$\underbrace{2\pi r^2}_{\text{circle(s)}} + \underbrace{2\pi rh}_{\text{rectangle}}$	$\pi r^2 h$	

1) Use the diagram at the below to answer the questions at the right.



- Give the mathematical name of the solid. cylinder
- What kind of figure is each base? circle
- Name the radius of the solid. GF
- Name the height of the solid. FH

2) Find the surface area and volume of the rectangular prism below.



$$\begin{aligned}
 SA &= 2(2 \cdot 2) = 8 \\
 &\quad + \\
 &\quad 2(2 \cdot 5) = 20 \\
 &\quad 2(2 \cdot 5) = 20
 \end{aligned}$$

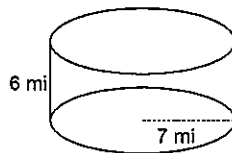
Surface Area:

$$48 \text{ in}^2$$

Volume:

$$(2)(2)(5) = 20 \text{ in}^3$$

3) Find the surface area and volume of the cylinder below and leave it in terms of π .



Surface Area:

$$98\pi + 84\pi = 182\pi$$

$$2(7)^2\pi + 2\pi(7)(6) =$$

Volume:

$$\pi(7)^2(6) = 294\pi$$

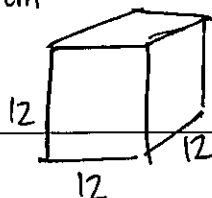
4) A cube has a volume of 1728 cm^3 .

a. What is the area of one face of the cube?

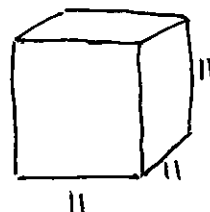
$$144 \text{ cm}^2$$

b. What is the full surface area of the cube?

$$6(144) = 864 \text{ cm}^2$$



5) The surface area of one face of a cube is 121 m^2 . Find the volume of the cube.



$$(11)(11)(11) = 1331 \text{ m}^3$$

